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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/749,175

12/30/2003

Adrian P. Stephens

1000-0030

7872

7590 08/19/2008  
The Law Offices of John C. Scott, LLC  
c/o PortfoliIP  
P.O. Box 52050  
Minneapolis, MN 55402

EXAMINER

JAIN, RAJ K

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

08/19/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/749,175 | <b>Applicant(s)</b><br>STEPHENS ET AL. |  |
|                              | <b>Examiner</b><br>RAJ K. JAIN       | <b>Art Unit</b><br>2616                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13, 14, 16, 20-27 and 29-43 is/are rejected.
- 7) ☒ Claim(s) 12, 15, 17-19 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 17-25, 32-34 and 39-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Barratt et al (USP 6,185,440 A1).

Regarding claims 1, 20, 32 and 39, Barratt discloses a method and system for use in a wireless network (abstract, fig. 1), comprising:

identifying a plurality of orthogonal sets of user devices (Fig. 1; subscribers not shown at receiving end of 109.m), wherein each orthogonal set in said plurality of orthogonal sets includes multiple user devices that can be transmitted to concurrently by an access point (base station not shown, signal incoming 103) using different antenna beams (Fig. 1, the AP transmits its processed signal 106.m via different antenna beams 109.m).;

selecting an orthogonal set from the plurality of orthogonal sets based on a predetermined selection criterion (col 7 lines 44-54; col 16 lines 11-16, a weighting factor or criterion is selected to determine an orthogonal set from the plurality of sets); and initiating a spatial division multiple access (SDMA) exchange for the selected orthogonal set (col 9 lines 9-11).

Regarding claims 2, 22 and 33, Barratt discloses selecting an orthogonal set includes selecting a set based on an amount of data that is buffered for delivery to user devices within each of said identified orthogonal sets (col 16 lines 11-16, a "weight" can be user defined criterion and therefore amount of data can be one such "weight" vector).

Regarding claims 3, 23, Barratt discloses selecting an orthogonal set includes: determining a maximum duration for the SDMA exchange (col 4 lines 11-15,

transmission is based on a predetermined time frame); evaluating orthogonal sets in said plurality of orthogonal sets to determine an amount of data that is buffered for said orthogonal sets (col 4 lines 39-67); and selecting an orthogonal set that has a largest amount of buffered data that can be delivered within said maximum duration of said SDMA exchange (col 16 lines 9-20, various weighting criterion may be used within the invention based on user defined requirements as appropriate).

Regarding claims 4, While Barratt explicitly fails to disclose Qos on link status, examiner takes official notice one skilled in the art will appreciate that QoS in wireless or wireline communications is fundamental for optimum bandwidth usage and therefore Examiner asserts that the QoS criteria is inherent within Barratt invention.

Regarding claims 5, Barratt discloses selecting an orthogonal set includes using latency related information as part of said predetermined selection criterion (delay diversity is used to accommodate multipath, col 11 lines 10-17; col 20 lines 35-40).

Regarding claims 6, 25, 34, 42, Barratt discloses simultaneously transmitting data to user devices in said selected orthogonal set, using corresponding antenna beams, so that a terminal end of the data transmitted to each user device occurs at substantially the same time (Figs. 1 & 2, data transmitted from any one antenna 109.m is transmitted at substantially the same time to the selected set of subscribers).

Regarding claims 21, 40, Barratt discloses an antenna controller (Figs. 1 & 2, 107.1 incorporates an antenna controller to manage the generation of antenna beams to be transmitted via 109.m antennas.).

Regarding claims 24, Barratt discloses controller initiates said SDMA exchange by causing said multi-user wireless transceiver to transmit data to each of the user devices in said selected orthogonal set using a separate antenna beam for each user device (Fig. 1, separate antenna beams 109.m for each user).

Regarding claims 41, Barratt discloses SDMA exchange by causing said multi-user wireless transceiver to transmit data to each of the user devices in said selected orthogonal set using a separate antenna beam for each user device (Fig. 1, separated antennas 109.m for each user device at the receiving end is disclosed).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-11, 13, 14, 16, 26, 27, 29-31, 35-38 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barratt (US 2005/0141407 A1) in view of Kasami et al (US 20020181492 A1 ).

Barratt fails to explicitly disclose an ACK request between one or more SDMA antenna beams and respective users and/or user groups.

Regarding claim(s) 7, 26 and 27, Barratt fails to explicitly disclose an ACK request between one or more SDMA antenna beams and respective users and/or user groups. Kasami discloses an ACK request between one or more SDMA antenna beams and respective users and/or user groups (see Figs. 2, 3, paras 6, 65-69, 106-109). Each subscriber within a group transmits an ACK back to the access point and therefore acknowledging proper receipt of data. The use of ACK packets allows for retransmission of data packets from the Access point to subscribers only for lost packets and not an entire data stream and thus improving network performance by reducing the number of data packets that have to be retransmitted. Thus it would have been obvious at the time the invention was made to incorporate the teachings of Kasami within Barratt so as to improve network performance by reducing the number of data packets that have to be retransmitted due to packet loss.

Regarding claim(s) 8, 35, Barratt fails to explicitly disclose an ACK request between one or more SDMA antenna beams and respective users and/or user groups. Kasami discloses an ACK request to each user device in said selected orthogonal set after said data has been transmitted (para 126). Reasons for combining same as for claim 7.

Regarding claim(s) 9, 10, 36 and 10, Barratt fails to explicitly disclose transmitting an ACK request includes transmitting a separate ACK request to each user device in said selected orthogonal set using a corresponding antenna beam. Kasami discloses an ACK request between one or more SDMA antenna beams and respective users and/or user groups (see Figs. 2, 3, paras 6, 9, 65-69, 106-109). Reasons for combining same as for claim 7.

Regarding claim(s) 11, 13, 14, 16, 29, 30, 31, 37, 38 and 43, Barratt fails to disclose separate ACK requests each include time information indicative of a time at which a corresponding user device is to respond to said ACK request. Kasami discloses time indication for each ACK request (see abstract, para 67). Providing a time limit for ACK responses reduces network congestion by reducing number of retransmission of packets. Thus it would have been obvious at the time the invention was made to incorporate the teachings of Kasami within Barratt so as to reduce retransmission of packets.

#### ***Allowable Subject Matter***

Claims 12, 15, 17-19 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

Applicant's arguments filed May 27, 2008 have been fully considered but they are not persuasive.

With respect to claim 1, Applicant contends Barratt fails to disclose "or suggest "identifying a plurality of orthogonal sets of user devices in a cell of a wireless network, wherein each orthogonal set in said plurality of orthogonal sets includes multiple user devices that can be transmitted to concurrently by an access point using different antenna beams," . Examiner respectfully disagrees, Barratt discloses Fig. 1, a plurality of user devices (not shown) that communicate via CDMA technology (col 6 lines 50-55; 62-67) as one form of wireless access. One skilled in the art will appreciate that CDMA employs orthogonal means of communication to differentiate its users utilizing a single

wideband frequency, furthermore, an orthogonal set is differentiated in a sectored cell site thus having more than one set of orthogonal users of a number of possible different frequencies. Furthermore, Barratt discusses the processing of a set of orthogonal signals (col 12 lines 39-44).

Applicant further contends that Barratt does not use different antenna beams, Examiner respectfully disagrees, Barratt explicitly discloses the use of an antenna “array” col 2 lines 20-30 (which Applicant concurs). How that antenna array is employed is irrelevant, only the fact that it has multiple and different antenna beams serving number of users, one aspect being within a sectored cell thus providing different antenna beams to different set of orthogonal users.

Applicant further contends that Barratt “selecting an orthogonal set based on predetermined selection criterion”, Examiner respectfully disagrees, Barratt discusses the use of weighting vectors and then iteratively determines a smaller set of weight vectors which are representative of the weight vectors (col 6 lines 21-33; col 7 lines 44-56). Each set of weight vectors is associated with a criterion and orthogonal sets (col 13 lines 19-60; col 14 lines 7-34), the Walsh-H. method applies a weighting algorithm to determine % of orthogonal sets with a given set of weight vectors).

Applicant further contends that Barratt fails to disclose an “SDMA exchange for the selected orthogonal set”. Examiner disagrees, Barratt is replete with discussion of SDMA exchange (col 2 lines 32-41; col 9 lines 7-10, 30-39). Since SDMA may be used in combination of frequencies (FDMA/TDMA) CDMA, the Examiner interprets that there is an exchange not only of frequencies but in the case of orthogonal sets (such as CDMA) there will also be an exchange of frequencies from one sector to another sector in a multisector CDMA cell, thus the Examiner asserts that SDMA exchange is disclosed by Barratt.

Thus based on above reasoning the Examiner respectfully asserts that Barratt does disclose all the limitations of claim 1 and therefore the rejection to claim 1 is sustained.

Regarding claim(s) 2, while the Examiner concurs that there is no mention of buffering in relation to weighting vectors, however, the Examiner asserts that the

transmission of a signal having a given data rate is similar to amount of data that can be transmitted while the remaining is buffered which is inherently taught by Barratt and therefore the rejection to claim 2 is sustained. Furthermore, claims 3-6, 21-25, 33-34 and 40-42 have been properly rejected on above cited art and there rejection is sustained.

Regarding claim(s) 5, Barratt discloses latency with respect to delay of signals (col 11 lines 10-17; col 20 lines 35-40).

With respect to claims 7-11, 13-14, 16, 26, 27, 29-31, 35-38 and 43, Applicant contends the cited references fail to disclose "transmitting an acknowledgement request to a user device" the Examiner respectfully disagrees, Kasami discloses an ACK request between one or more SDMA antenna beams and respective users and/or user groups (see Figs. 2, 3, paras 6, 65-69, 106-109). Each subscriber within a group transmits an ACK back to the access point and therefore acknowledging proper receipt of data. The use of ACK packets allows for retransmission of data packets from the Access point to subscribers only for lost packets and not an entire data stream and thus improving network performance by reducing the number of data packets that have to be retransmitted. Thus it would have been obvious at the time the invention was made to incorporate the teachings of Kasami within Barratt so as to improve network performance by reducing the number of data packets that have to be retransmitted due to packet loss.

Thus based on above reasoning, Examiner asserts that the cited references do in fact teach the limitations of subject claims and therefore the rejection to claims 7-11, 13-14, 16, 26, 27, 29-31, 35-38 and 43 is sustained.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not



mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAJ K. JAIN whose telephone number is (571)272-3145. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

***/Raj K. Jain/***

*Art Unit 2616*

August 18, 2008

*/Chi H Pham/*

Supervisory Patent Examiner, Art Unit 2616

8/13/08

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